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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
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Seattle, Washington 98101

FEB 12 1993

Department of Ecology
Water Quality Program

JUL - 2 1996

Reply to
Attn of: WD-139

MEMORANDUM

SUBJECT: Recommendation for TMDL Approval

Mill Creek - RM 6.4 to 0 - Waterbody Segment No. WA-32-1060

TMDL Parameter: Ammonia-Nitrogen

FROM: Rob Pedersen, Environmental Engineer
Environmental Characterization Program

TO: File

- TMDL submitted 9 March 1992
- TMDL package completed 13 January 1993
  - EPA Approval Checklist
  - Document 1: Transmittal letter
  - Document 2: TMDL document
  - Document 3: [Not provided] Singleton, L. and J. Joy. 1982. "Mill Creek Receiving Water Survey", Memorandum to Carl Nuechterlein, Washington Department of Ecology, Olympia, WA.

    Joy, J. 1987. "Walla Walla Treatment Plant/Mill Creek Receiving Water Survey, February 12-13, 1986, and TMDL Evaluation". Washington Department of Ecology, Olympia, WA.
  - Documents 4a, 4b, 4c: Implementation documentation, for the city of Walla Walla sewage treatment plant NPDES permit:

    Document 4a: Public notice documentation for the city of Walla Walla NPDES permit.

Document 4b: NPDES Permit No. WA-002462-7, city of Walla Walla, issued April 29, 1988, expires April 29, 1993.

Document 4c: Fact Sheet for Walla Walla WWTP; dated February 11, 1988.

Transmittal letter - Complete (see Document 1)

- States that TMDL has been established in accordance with Section 303(d)(1) of the Clean Water Act.
- **Review note: meets requirements.**

Problem Assessment - Complete (see Document 3, and 4c)

- Mill Creek is a Class B stream, with special conditions that require dissolved oxygen concentrations to exceed 5 mg/l at the point of confluence with treatment plant effluent. Mill Creek, below Walla Walla's treated wastewater discharge point, is a seasonal stream. To satisfy water rights, during the growing season, all flow above the city is diverted. No resident aquatic species remain in the area during the summer. Additionally, treatment plant effluent is diverted to irrigation uses from 1 May through November. Mill Creek, above and for almost a mile below the treated wastewater discharge point, has been converted to a flood protection ditch by the Corps of Engineers and no bank vegetation exists.
- Receiving water studies (Document 3) examined the impact of the treatment plant discharge. Nonpoint pollution from agricultural area runoff is expected but not documented.
- Documented problems in Mill Creek below Walla Walla were residual chlorine and ammonia toxicity problems, a low DO profile and a poor trophic water quality index score due to nutrient enrichment.
- **Review notes: Problem assessment provides brief background information, identifies water quality problems for residual chlorine and ammonia toxicity, low dissolved oxygen and aesthetics due to pollutant loads from the waste water treatment plant.**

TMDL document - (see Document 2)

- Prior to issuance of Walla Walla's 1983 NPDES permit, water quality problems included instream residual chlorine toxicity, low dissolved oxygen (DO), ammonia

toxicity and nutrient enrichment. The 1986 receiving water study showed minimum effect from treatment plant effluent. The NPDES permit Fact Sheet stated that low residual chlorine, ammonia and BOD concentrations maintained Class B water quality criteria and did not endanger resident fish populations.

- Data from the 1986 discharge season indicated adequate instream DO levels were maintained and ammonia toxicity problems were not present.

- Ecology prepared a TMDL for un-ionized ammonia-N and determined a loading capacity for total ammonia-N for each month from October through April. The loading rates were shown to maintain an instream un-ionized ammonia-N concentration below 16 µg/l-N, consistent with the state water quality standard at a design 1Q10 monthly low flow. No wasteload allocation (WLA) was set for ammonia-N during the permitted discharge period. A WLA of zero pounds of ammonia-N per day was set for the period from May through November.

- In proposing the new permit, Ecology stated the new conditions have reduced instream residual chlorine toxicity problems and may have improved the DO profile below the plant. The seasonal removal of much of the phosphorus and nitrogen load has probably contributed to improved downstream trophic water quality index scores. No loading capacities nor ambient data were provided for total nitrogen, total phosphorus and residual chlorine.

- **Review note: Clearly identifies the wasteload capacity for the TMDL for ammonia-N to be zero from 1 May through November. References the supporting technical documents to show that ammonia toxicity is not present during the permitted discharge period. Followup monitoring is not planned. No data were provided to determine compliance with chlorine toxicity criteria nor aesthetic values.**

Supporting Studies - Complete (see Document 3)

- A Class II inspection and receiving water study was conducted on February 12-13, 1986. The inspection indicated that Walla Walla's treated effluent had a minimum effect on Mill Creek.

- **Review notes: Documentation gives the basis for calculating the TMDL for ammonia-N. Instream ammonia toxicity is not expected during the permitted discharge period and the discharge prohibition period will ensure**

a WLA of zero from May through November.

Public participation - Complete (see Documents 4a, 4c)

- Public notice for city of Walla Walla NPDES permit reissuance.
- **Review notes: Adequate public notice for permit reissuance; TMDL proposals were not the primary purpose of the public notice.**

Enforceability - Complete (see Document 4b)

- NPDES Permit No. WA-002462-7, city of Walla Walla WWTP.
- **Review notes: Valid permits and supporting documentation with applicable conditions for the Class B segment of Mill Creek.**

TMDL effectiveness plan - Complete (see Documents 2, 4b and 4c)

- In permits: effluent monitoring for un-ionized ammonia, nitrites and nitrates.
- **Review notes: Adequate effluent monitoring and discharge prohibition period to assess compliance with the TMDL.**

Additional Information

- No supporting data were submitted to determine an adequate TMDL for nutrients such as total phosphorus and total nitrogen. Seasonal removal of treatment plant effluent from Mill Creek should contribute to improved trophic water quality index scores in lower Mill Creek. However, no loading capacity for nutrients from point or nonpoint sources to Mill Creek was determined. It is not known whether the narrative standard of aesthetic values is attained in lower Mill Creek.
- According to Document 4c, the mile-plus segment of Mill Creek below Walla Walla's WWTP discharge point is not prime wildlife habitat. Regardless, the water quality standard of 0.011 mg/l residual chlorine is applicable.

  Document 4c gives a permit limit of 0.05 mg/l residual chlorine and states that instream residual chlorine toxicity problems are reduced, but no supporting data are provided. To meet criteria, a dilution ratio of approximately 4.5:1 is required. EPA examined USGS flow data for 1991. During the permitted discharge

months of December, January and February, dilution was inadequate during 25, 17 and 13 days of those months, respectively.

- **Review notes: EPA recommends periodic ambient monitoring for potential ammonia toxicity.**

  If the aesthetic standard is not being met in Mill Creek, a watershed evaluation for nutrient loading dynamics should be prepared. More information is needed to approve TMDLs for total phosphorus and total nitrogen.

  For residual chlorine, TMDL approval options are: impose more stringent discharge permit limit(s) and obtain ambient data for residual chlorine; develop a less stringent site specific standard.

Recommendation, approve TMDL for ammonia-nitrogen.

More information is needed to evaluate TMDLs for total phosphorus, total nitrogen, dissolved oxygen, and total residual chlorine.

ERP, 01/14/93